WHAT IS CLAIMED IS:

1. A G protein-coupled receptor antagonist of claim 3, which comprises amino acid sequence of the FP receptor selected from the group consisting of ILGHRDYK (PCP-8; SEQ ID NO:1); WEDRFYLL (PCP-10; SEQ ID NO:2); YQDRFYLL (PCP-14; SEQ ID NO:3); ILAHRDYK (PCP-13.7; SEQ ID NO:4); ILGRRDYK (PCP-13.11; SEQ ID NO:5); ILGHKDYK (PCP-13.13; SEQ ID NO:6); ILGHRNYK (PCP-13.14; SEQ ID NO:7); ILGHQDYK (PCP-13.18; SEQ ID NO:8); ILGHRDY-amide (PCP-13.20; SEQ ID NO:9); ILGHRDYK-amide (PCP-13.21; SEQ ID NO:1); ILGWRDYK (PCP-13.22; SEQ ID NO:10); ILGXRDYK (PCP-13.24; SEQ ID NO:11); SNVLCSIF (PCP-15; SEQ ID NO:12); and functional peptide analogues thereof, wherein X is cyclohexyl alanine.

2. A peptide consisting of an amino acid sequence selected from the group consisting of SEQ ID NO:1 to 12 and wherein said amino acid sequence contains L- and/or D-amino acid, an amino acid sequence with at least about 90% homology to SEQ ID NO:1 to 12.

3. A method for preventing premature delivery of fetus, which comprises the step of administering to a female in need of such a treatment a therapeutically effective amount of a G protein-coupled receptor antagonist of claim 1.

4. A method for preventing and/or treating dysmenorrhea comprising the step of administering to a female in need of such a treatment a therapeutically effective amount of a G protein-coupled receptor antagonist of claim 1.

5. A pharmaceutical composition containing at least a G protein-coupled receptor an antagonist of claim 1, mixture thereof, in association with a pharmaceutically acceptable carrier.

6. A method for determining activity of a compound of claim 1 as a G protein-coupled receptor antagonist capable of binding to the extracellular elements of the said receptor, comprising the steps of:

a) culturing cells which express said receptor or identifying animal tissues *ex vivo* or *in vivo* where physiological consequences are dependent on said receptor;

b) contacting said cells or tissues with said compound at a concentration of 10^{-10} M to 10^{-3} M to be tested for antagonist activity at said receptor; and

c) measuring a response to alter the transduction of a signal resulting in physiological consequences selected from the group consisting of increments in cell calcium, phosphoinositide hydrolysis, increased/decreased cellular cyclic adenosine monophosphate, cell growth and/or differentiation, altered gene expression, and smooth muscle contraction or dilation.

7. A method for determining activity of a compound of claim 1 as a prostaglandin F_2 alpha receptor antagonist capable of binding to the extracellular elements of the said receptor, comprising the steps of:

a) culturing cells which express said receptor or identifying animal tissues *ex vivo* or *in vivo* where physiological consequences are dependent on said receptor;

b) contacting said cells or tissues with said compound at a concentration of 10^{-10} M to 10^{-3} M to be tested for antagonist activity at said receptor; and

c) measuring a response to alter the transduction of a signal resulting in physiological consequences selected from the group consisting of increments in cell calcium, phosphoinositide hydrolysis, cell growth and/or differentiation, altered gene expression, and smooth muscle contraction or dilation.

8. The use of a therapeutically effective amount of a G protein-coupled receptor antagonist of claim 1 4 for the preparation of a medicament for preventing premature delivery of fetus.

9. The use of a therapeutically effective amount of a G protein-coupled receptor antagonist of claim 1 4 for the preparation of a medicament for preventing and/or treating dysmenorrhea.